

Hudsonian Godwit
(*Limosa haemastica*);
Kristine Sowl, USFWS (CC)

Using Hudsonian Godwit tracking data to support a community outreach comic

Conservation Contribution #01

Conservation Action: Education and Awareness



Smithsonian
Migratory Bird Center

Prepared by the Shorebird Science & Conservation Collective:

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Project Background

Conservation Request

Nature Canada requested Hudsonian Godwit (*Limosa haemastica*) tracking data from the Shorebird Science and Conservation Collective (hereafter, "Shorebird Collective") to feature in a community outreach comic. The comic's intended goal was to raise awareness and excitement about local shorebird species found along James Bay, an important stopover area in Canada for Hudsonian Godwits during southbound migration. The comic follows the movements of Bico, a fictional Hudsonian Godwit, as she travels to and from her breeding grounds in the Canadian subarctic, stopping to refuel in James Bay in the fall, before continuing to her wintering grounds in Chile. Nature Canada hoped to conclude the comic with an infographic showing actual migration paths of Hudsonian Godwits recorded by scientists.

The Shorebird Collective provided Nature Canada with two Hudsonian Godwit track lines ([link to page with more information on shorebird tracking data](#)) contributed by Jennie Rausch, Canadian Wildlife Service, Environment and Climate Change Canada, and summary statistics about important aspects of their migration (e.g., stopover sites, stopover duration, average flight speeds). Nature Canada used this information to create the infographic which they featured at the end of the comic (**Figure 1**). Download Nature Canada's comic, "The Story of Bico", using the following link: [link to comic](#).

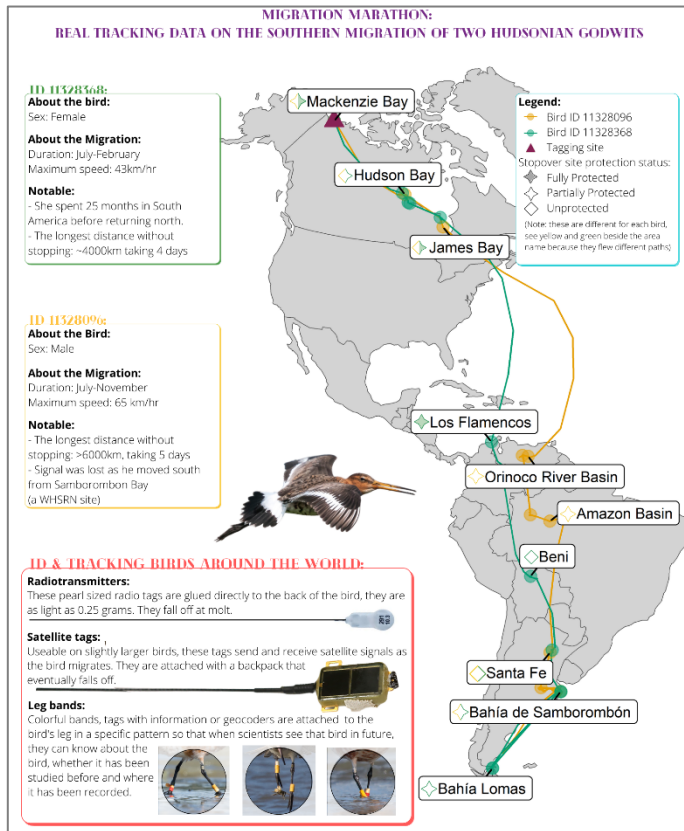
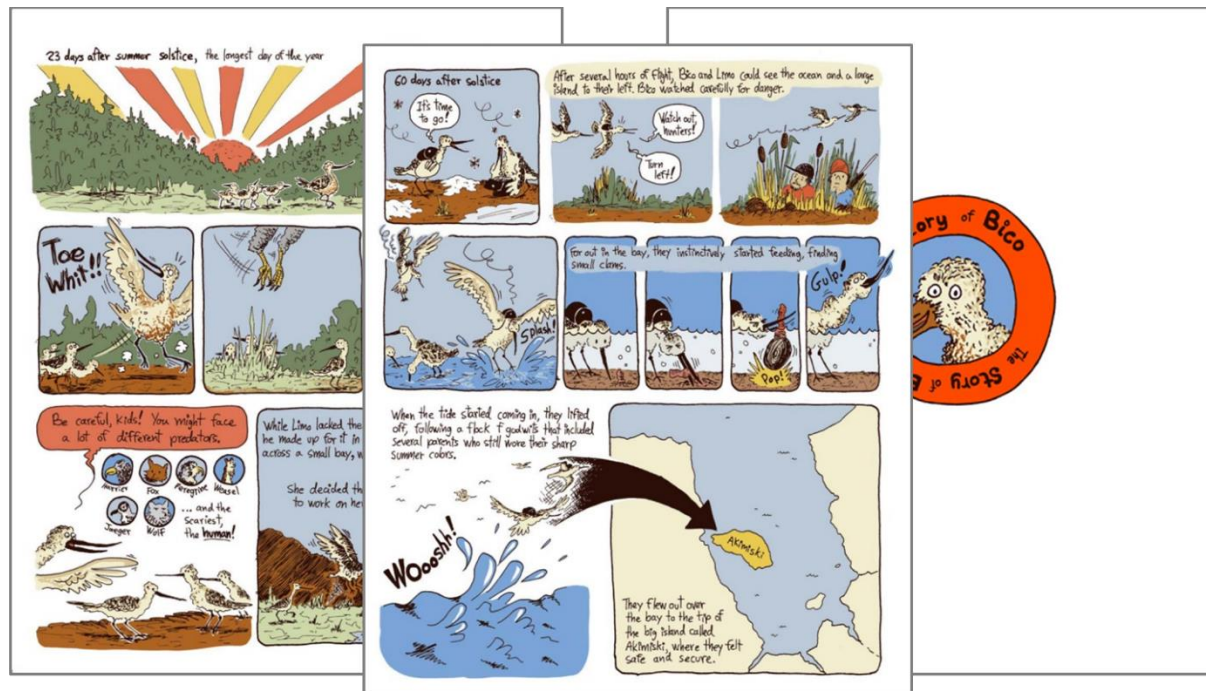


Figure 1. Infographic of Hudsonian Godwit (*Limosa haemastica*) tracks with summary statistics featured in Nature Canada's "The Story of Bico". Hudsonian Godwit tracks provided by Jennie Rausch, Canadian Wildlife Service, Environment and Climate Change Canada. See page 9 for additional data contributor information. Tracking map created by the Shorebird Science and Conservation Collective. Final infographic created by Nature Canada.

Conservation Impact

The comic (Figure 2) was launched on Nature Canada's website ([link to Nature Canada's website](#)) near the end of 2022 and paper copies were distributed to indigenous communities and classrooms around James Bay. Nature Canada will also be offering local schools the opportunity for live readings and are exploring options to translate the comic into additional languages, including Cree dialects, to expand their outreach impact.



About the Shorebird Science and Conservation Collective

The Shorebird Collective is a partnership of scientists and practitioners working to translate the collective findings of shorebird tracking and community science data into effective on-the-ground actions to advance shorebird conservation in the Western Hemisphere. Learn more on our webpage: [link to the Shorebird Collective webpage](#).

About Nature Canada

Nature Canada is a nonprofit organization dedicated to protecting and conserving nature in Canada through community engagement and advocacy. As one of the oldest national nature conservation charities in Canada, the organization has helped protect over 110 million acres of Canadian parks and wildlife areas and countless species. Today, they represent a network of over 130,000 members and supporters and more than 1,000 nature organizations. Learn more on Nature Canada's website: [link to Nature Canada's website](#).

About Hudsonian Godwits

Hudsonian Godwits are a large shorebird with long legs and a long, slightly upturned, bicolored bill (Walker et al. 2020). Breeding adults have rufous underparts with mottled brown upperparts; nonbreeding adults and juveniles have greyish-brown coloration (Walker et al. 2020). As a long-distance migrant, they breed in the subarctic and boreal regions of Alaska and Canada¹ and winter in southern parts of South America² (Senner 2010). Most Hudsonian Godwits make an elliptical migration, flying southbound over the Atlantic to South America in the fall and northbound through the interior regions of the Americas in the spring (COSEWIC 2019, Senner 2010). Across their range they depend on a variety of shallow wetland habitats, including meadows, bogs, shorelines, mudflats, lagoons, sewage ponds, and flooded fields. James Bay is a critical staging area for Hudsonian Godwits during southbound migration (COSEWIC 2019). From James Bay, Hudsonian Godwits typically fly nonstop over the Atlantic to their next stopover site in South America (COSEWIC 2019, Senner 2010).

About James Bay

James Bay is located at the southern end of the Hudson Bay between the Canadian provinces of Ontario and Quebec (Figure 3). Several protected areas exist within and along the coastline of the bay, including the Ministikawatin and Maatuskaau Biodiversity Reserves, Polar Bear Provincial Park, and the Akimiski Island, Boatswain Bay, and Moose River Migratory Bird Sanctuaries (Figure 3, UNEP-WCMC and IUCN 2021). The bay's coastal wetlands and exposed mudflats provide valuable foraging habitat for 25+ Nearctic shorebird species that either breed in the area – e.g., Whimbrel (*Numenius phaeopus*), Short-billed Dowitcher (*Limnodromus griseus*), Marbled Godwit (*Limosa fedoa*), or stage during southbound migration – e.g., rufa Red Knot (*Calidris canutus rufa*), Semipalmated Sandpiper (*C. pusilla*), White-rumped Sandpiper (*C. fuscicollis*), Lesser Yellowlegs (*Tringa flavipes*) (Friis 2020, Jehl et al. 2020, Macdonald et al. 2021, Melcher et al. 2010, Wilke and Johnston-González 2010).

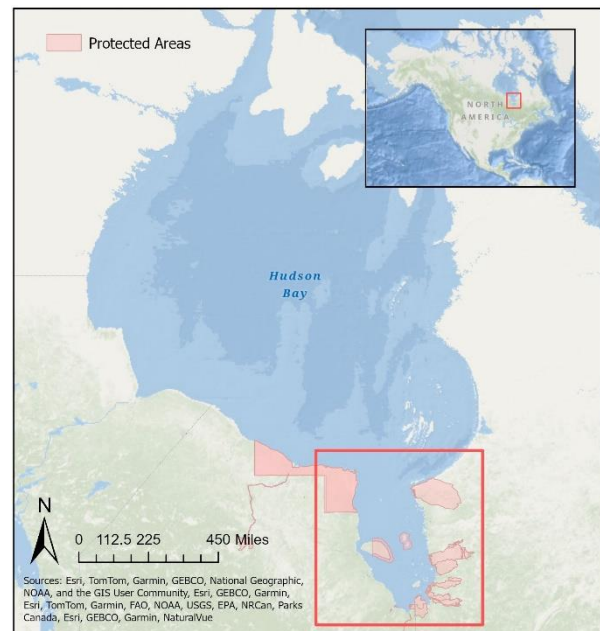


Figure 3. Location of James Bay, outlined in the red box. An additional map layer showing protected areas, as defined by UNEP-WCMC and IUCN (2021), around James Bay is also provided for additional context of the landscape.

¹ Three distinct breeding populations exist across Canada and Alaska: 1) Hudson Bay Lowlands in Manitoba and Ontario; 2) Mackenzie Delta in Northwest Territories; and 3) central, western, and southern Alaska (Senner 2010).

² Three primary wintering sites in southern South America include Bahía Lomas, Chile and Bahía San Sebastián, Argentina (both on the island of Tierra del Fuego), and Isla Chiloé, Chile (Senner 2010).

Shorebird Background

Shorebirds are a diverse group of birds in the order Charadriiformes, including sandpipers, plovers, avocets, oystercatchers, and phalaropes. There are approximately 217 shorebird species in the world (O'Brien et al. 2006), 81 of which occur in the Americas. 52 species breed in North America (Morrison et al. 2000) and 35 species breed in Latin America and the Caribbean (Lesterhuis and Clay 2019). They are among the planet's most migratory groups of animals. Many species in the Western Hemisphere, for example, travel thousands of miles every year between their breeding grounds in the Arctic and wintering grounds in the Caribbean and Central and South America, stopping at key sites along the way to rest and refuel. Across their vast range, shorebirds depend on a variety of habitats, including coastlines, shallow wetlands, mudflats, lake and pond edges, grasslands, and fields.

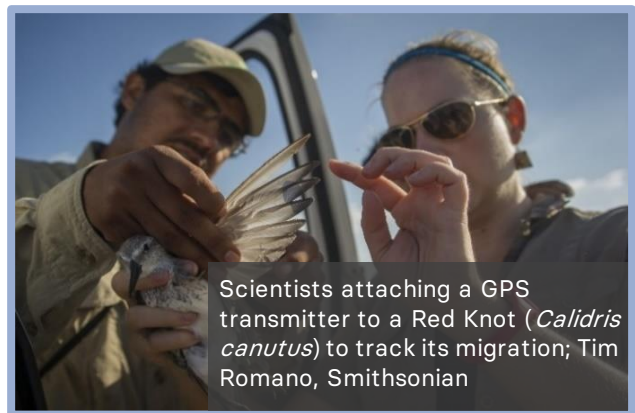


Long-billed Curlew (*Numenius americanus*);
Tim Romano, Smithsonian

While shorebirds are champion migrants, their populations are rapidly declining. Many populations have lost over 70% of their numbers in the past 50 years (NABCI 2022, Rosenberg et al. 2019, Smith et al. 2023), making them one of the most vulnerable bird groups in North America. Habitat loss and alteration, human disturbance, and climate change are just some of the major threats facing shorebirds today. Effective shorebird management is even more of a challenge due to many species depending on habitats across multiple countries under different political jurisdictions. Despite these trends and logistical challenges, many public and private groups are working to protect shorebirds and the habitats they depend on.



Flock of Marbled Godwits (*Limosa fedoa*) next to a shorebird scientist;
Tim Romano, Smithsonian



Scientists attaching a GPS transmitter to a Red Knot (*Calidris canutus*) to track its migration;
Tim Romano, Smithsonian

About Shorebird Tracking Data

Tracking data provide valuable insight into where shorebirds move and are located throughout the year (Figure 4). These data can ultimately help biologists and practitioners make more informed conservation and land management decisions to protect shorebirds and their habitats. Tracking data are collected via tiny electronic devices (often called “tags”) which are attached directly to individual birds (typically with either leg bands, harnesses, or glue) and may be carried by the birds year-round. Tag types of the tracked Hudsonian Godwits featured in Nature Canada’s infographic were satellite tags.



Satellite tags work by sending signals to orbiting satellites that re-transmit location data back to a receiving station which researchers can access through their computer. The two types of satellite tags commonly used to study birds include Global Positioning System (GPS) and Argos tags. GPS tags typically have high spatial accuracy (i.e., minimal location error, generally <10 meters), while Argos tags can have location error of 500-2,500 meters. The two godwits featured in Nature Canada’s infographic were tracked with Argos satellite tags. [Link for more information on satellite tags.](#)

One key benefit of tracking data compared to other data types such as survey or count data is that they give detailed information on movements and habitat use of individual animals in areas that are otherwise difficult to access, such as remote areas or private lands. Therefore, the birds themselves show us where they are, independent of the need for direct human observation.

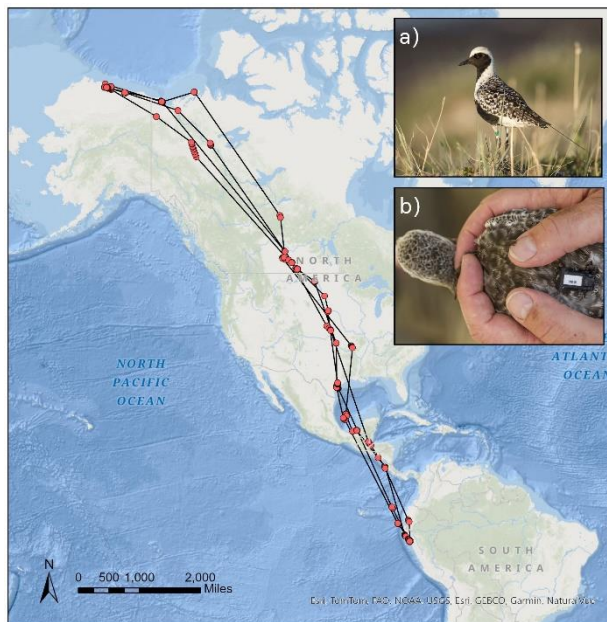


Figure 4. Full cycle track line across two years for an individual Black-bellied Plover (*Pluvialis squatarola*); contributed by Autumn-Lynn Harrison, Smithsonian Migratory Bird Center; David Newstead, Coastal Bend Bays and Estuaries Program; and Lee Tibbitts, U.S. Geological Survey, Alaska Science Center. Photos: **a)** Breeding male Black-bellied Plover with leg flag and <5g solar satellite tag, Ryan Askren, USGS/Smithsonian; **b)** Satellite tag attached to the back of a Black-bellied Plover; Tim Romano, Smithsonian.

Using Education for Conservation Action

Education and outreach programs offer a unique opportunity to raise awareness about, and action towards, specific conservation concerns. Its application can increase knowledge, shape attitudes and values, build skills that prepare individuals to take positive conservation action, and foster engagement between community members, scientists, practitioners, and decision-makers (Ardoin et al. 2020).

Nature Canada's Hudsonian Godwit comic is one example of an educational outreach product designed to raise awareness about shorebirds and their incredible migrations. Additionally, the comic educates readers about important shorebird areas, including the James Bay region, which is where the comic's intended target audience is located. With many shorebird populations in decline (NABCI 2022, Rosenberg et al. 2019, Smith et al. 2023), now is more important than ever to spread knowledge about these birds.

When planning any conservation education program, lesson, or activity, efforts must be designed in a way that align with the participants' attitudes and values and framed in way that makes them care (Lakoff 2010). For example, the comic's section on the James Bay region provided a local element for the comic's target audience, thus enticing readers to read on and learn more. Additionally, encouraging simple and manageable actions is often a first step to motivate change and initiate greater conservation action (Mengak et al. 2019, Schultz 2002). Relevant to helping shorebirds, there are several examples of simple and manageable "shorebird-friendly" actions that anyone can take or recommend to others.

Shorebird-Friendly Actions

- 1. Avoid closed areas** – Avoid walking through roped or blocked off areas on beaches where shorebirds may be nesting.
- 2. Keep dogs leashed** – Keeping dogs leashed at beaches will prevent them from rushing towards areas where shorebirds nest, rest, and feed.
- 3. Don't get too close** – While it's exciting to get close to wildlife, being too close can disturb the birds. It's better to grab a pair of binoculars and observe from afar!
- 4. Pick up trash** – Keeping beaches and other natural landscapes clean will prevent birds from choking or becoming entangled in trash. Garbage can also attract predators, which prey on shorebird eggs.
- 5. Avoid pesticides** – Limit pesticide use around the home and yard as most are toxic to birds and other wildlife.
- 6. Turn lights out** – Turning off excess lighting during the migration months will help shorebirds (and other migratory birds) become less disoriented while migrating.
- 7. Protect wetlands** – Support the protection of your local wetlands, which provide important habitat for shorebirds.
- 8. Share sightings on eBird** – Report your shorebird observations on eBird to help scientists better understand where shorebirds are and when, allowing for more effective conservation and land management efforts ([link to eBird](#)).



Picking up trash on a beach;
Tim Romano, Smithsonian

Data Contributors

Tracking data for this project were contributed to the Shorebird Collective by the following people and organizations. Individuals with an asterisk (*) indicates the technical point of contact for the dataset. A full list of data contributors to the Shorebird Collective can be found on our webpage: [link to Shorebird Collective webpage](#).

Hudsonian Godwit Tracks

Jennie Rausch*¹, Fletcher Smith^{2,3}, Bryan Watts²

Associated Citation: Smith, F. M., Watts, B. D., and Rausch, J. 2021. Tracking Hudsonian Godwit in Canada. The Center for Conservation Biology, College of William and Mary and the Virginia Commonwealth University, Williamsburg, VA USA.

Contributor Organizations

¹ Canadian Wildlife Service, Environment and Climate Change Canada, ² College of William and Mary,

³ Georgia Department of Natural Resources

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